FOREST INSECT CONDITIONS

Yosemite National Park
October 1952

RECONNAISSANCE SURVEY

Introduction

A reconnaissance survey was conducted in the Yosemite National Park from October 28 through 31, 1952. Park Forester Emil Ernst gave assistance throughout the survey. Areas examined include the pine belt from Mariposa Grove to Hetch Hetchy, and the recreational areas of Illilouette Creek, Bridalveil Creek, Mono Meadows, Tenaya Lake and Tuolumne Meadows; methods of examination were road stripping and topographic spotting. The entire park was aerially surveyed earlier in the month.

Insect and Host Species

Important insects encountered and their host trees are as follows:

Common Name	Scientific Name	Host
Western pine beetle	Dendroctonus brevicomis Lec.	Ponderosa pine
Jeffrey pine beetle	D. jeffreyi Hopk.	Jeffrey pine
Mountain pine beetle	D. monticolae Hopk.	Sugar pine
Pine engraver beetles	Ips spp.	Ponderosa pine
Fir engraver beetles	Scolytus spp.	Red fir & White fir
Lodgepole pine needle-miner	Recurvaria milleri Busck	Lodgepole pine

Status and Scope of Infestations

In the mixed conifer type along the western slopes of the park, which includes the high-use areas of Mariposa Grove and Yosemite Valley, low endemic conditions prevail. It is estimated that no more than 150 ponderosa, Jeffrey and sugar pines are currently infested and will need control. One rather remote local area, in the vicinity of Laurel Lake, was observed from the air to be sustaining a relatively high level of loss apparently from the western pine beetle in ponderosa pine. Some loss was also seen in Illilouette Creek; this, while not yet heavy enough to be serious, should be kept under surveillance next season.

Red fir and white fir stands in the Park are sustaining heavy loss from a combination of mistletoe and fir engraver beetles. This condition has been observed to be common throughout most of the true-fir belt of California this season. Particularly heavy damage was observed in the Gin Flat - South Fork Tuolumne area, and along the road from Chinquapin to Glacier Point. General branch killing and occasional total killing is evident. Inasmuch as the damage is of a scattered nature, a numerical or area-wise estimate of loss has not been attempted.

Lodgepole pine over a wide area of the Tenaya Lake - Virginia Canyon region and in Jack Main Canyon is heavily infested by the lodgepole pine needle-miner. According to Park Forester Ernst, defoliation caused by the needle-miner this year is the most serious that he has observed in his 20-years' experience in the Park. Because of the threat of widespread tree mortality, either as a direct result of defoliation or through buildup of mountain pine beetle populations in trees weakened by defoliation, this is considered the Park's most serious infestation at the present time. The gross acreage of the infestation, as determined by aerial sketch-mapping, approximates 46,000 acres.

Values Threatened and Recommended Action

Recreational use of immeasurable value justifies special considerations in the control of forest insects in a national park. With this in mind, the following direct control recommendations are made:

1. Pine bark beetles

Fell-peel-burn control for bark beetles has long been the standby in the region and continuation of this method of control in necessary cases is recommended. An aggressive salvage-logging program is urged to supplement fell-peel-burn whenever possible; correctly carried on, this process gives control benefits equal to fell-peel-burn at greatly reduced costs.

Consideration might also be given to the use of toxic-oil sprays applied to the underside of peeled bark in cases in which the infested trees are too far from roads for salvage logging and high fire hazard makes fell-peel-burn dangerous to use. Broods of the Jeffrey pine beetle and the mountain pine beetle, which lie in the inner bark, can undoubtedly be killed by a direct application of toxic-oil spray with a stirrup pump, and it is probable that broods of the western pine beetle, in spite of their protected position in the outer bark, can be effectively controlled by liberal dosages, inasmuch as such a spray has been found to penetrate well through bark crevices and larval mines. It would be desirable to have a Bureau representative on hand if this technique is applied.

2. Fir engraver beetles

General control of the fir engraver beetles, because of the scattered nature of the infestation and doubtful value of control methods, is not recommended.

3. Lodgepole pine needle-miner

Control through aerial spraying of 1 pound of DDT in 1 gallon of oil per acre is suggested; in view of the fact that the control method has not been conclusively proved to be effective against this insect it is recommended that efforts be confined to a pilot-plant type of operation in which only the areas of highest insect control priority would be treated. The spraying should be timed so as to kill the young larvae as they emerge from the eggs and make their way to initial feeding points. This would probably be in mid-August.

Discussion

Inasmuch as the barkbeetle loss in the park at present is at what appears to be practically an irreducible minimum, benefits of maintenance control as recommended cannot be expected to be noticeably lasting; but they should minimize the possibility of the return of epidemic conditions.

Needle-miner control is contingent primarily on the ability of the Park Service to obtain a plane-pilot combination that will be able to get the spray on the ground in the extremely rugged terrain where the infestation lies, and secondly on the effectiveness of the insecticide. If either of these two factors is found to be ineffective, other control methods will have to be attempted. These would probably entail spray applied from the ground and directed against trees bordering the highway and other areas of particularly heavy use.

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FOREST INSECT CONDITIONS

YOSEMITE NATIONAL PARK, CALIFORNIA

SEASON OF 1952

1 inch = approx. 8 miles

LEGEND

- Park boundary
- Pine beetle infestation area
- Lodgepole pine needleminer infestation area